Modified electrolyte and diaphragm for fused salt electrolysis

Description of Technology: This invention relates to an electrolytic cell for the electrolysis of fused alkali chloride salts to produce alkali metals such as sodium and lithium.

Patent Listing:

1. **US Patent No. 6,063,247**, Issued May 16, 2000, "Modified electrolyte and diaphragm for fused salt electrolysis"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F6063247
2. **US Patent No. 6,117,303**Issued September 12, 2000, "Modified electrolyte for fused salt electrolysis"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F6117303

Market Potential: Electrolytic cells for the electrolysis of fused alkali chloride salts are used widely in industry to produce alkali metals, such as sodium and lithium, that are difficult to reduce to a metallic state. A major cost for operating these cells is the cost of electric power. Since the early 1970's, the cost of electric power has increased sharply. Development of more energy-efficient electrolysis processes, therefore, has become increasingly important.

The present invention provides an electrolytic cell for the production of chlorine and an alkali metal from a fused chloride electrolyte having at least one graphite rod anode, a concentric cylindrical cathode surrounding each anode, a rigid cylindrical diaphragm positioned between said anode and cathode, and insulated aligning means that engage the diaphragm and the anode or cathode to concentrically align said diaphragm as it is placed in position (i.e., the diaphragm is self-aligning). In a preferred diaphragm the aligning means are sets of insulating rollers, conveniently mounted on the outer surface of the diaphragm to engage the inner surface of the cathode as the diaphragm is inserted into position.

Benefits:

- A more energy-efficient electrolysis process

Applications:

- Production of alkali metals

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